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EXAMINER

MATTHIAS, JONATHAN R

ART UNIT

PAPER NUMBER

3748

NOTIFICATION DATE

DELIVERY MODE

12/23/2008

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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<b>Office Action Summary</b>	<b>Application No.</b> 10/575,194	<b>Applicant(s)</b> YODICE ET AL.	
	<b>Examiner</b> Jonathan Matthias	<b>Art Unit</b> 3748	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 11 June 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>08/24/2007</u> .  | 6) <input type="checkbox"/> Other: _____                          |

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 3-5, 9, 13-15, and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent No. 4,404,795 to Oishi et al. (Oishi).

In reference to claim 1, Oishi discloses a superatmospheric-pressurized source (19, Fig. 2; col. 4, lines 36-57) of gaseous oxygen; an inlet (17, Fig. 2; col. 4, lines 36-57) for the gaseous oxygen from the superatmospheric-pressurized source wherein the exhaust emissions from the engine flow past the inlet and form a mixture with the gaseous oxygen from the inlet; and a diesel particulate filter (14, Fig. 2; col. 4, lines 36-57) or catalyzed diesel particulate filter through which the mixture of exhaust emissions from the engine and gaseous oxygen from the inlet flows, wherein the oxygen content of the mixture is greater than the oxygen content of the exhaust emissions from the engine.

In reference to claim 3, Oishi discloses the gaseous oxygen is intermittently introduced into the inlet for mixing with the engine exhaust emissions during the operation of the engine (col. 4, line 58 - col. 6, line 51).

In reference to claim 4, regarding the limitation of the oxygen content of the mixture is greater than the oxygen content of the exhaust emissions from the engine by at least 0.1% by volume, during the combustion reaction in an engine the oxygen gas component of the air mixed with fuel is "used up" as an oxidant in the combustion the fuel. If the exhaust of that reaction is then mixed with air, the mixture will necessarily have a higher oxygen gas content than of the exhaust alone. Therefore the prior art of Oishi meets the limitations of the claim.

In reference to claim 5, Oishi discloses the source of gaseous oxygen is air (col. 4, lines 36-57). With regards to the limitation the oxygen containing gas has an oxygen content of 1 to 99% by volume; it is notoriously well known in the art that air contains approximately 21% oxygen by volume. Therefore the prior art of Oishi meets the limitations of the claim.

In reference to claim 9, Oishi discloses the diesel particulate filter or catalyzed diesel particulate filter comprises 2 or more sections wherein each section is capable of being separately regenerated (see Fig. 5; col. 7, line 37 - col. 8, line 61).

In reference to claim 13, Oishi discloses at least one heat source (15, Fig. 2; col. 4, lines 36-57).

In reference to claim 14, Oishi discloses the heat source is a heater or a heat exchanger (15, Fig. 2; col. 4, lines 36-57).

In reference to claim 15, Oishi discloses a control unit (16, 20, Fig. 2; col. 4, line 58 - col. 5, line 39).

In reference to claim 18, under the principles of inherency, if a prior art device, in its normal and usual operation, would necessarily perform the method claimed, then the method claimed will be considered to be anticipated by the prior art device (see MPEP 2112.01). Therefore, the prior art device of Oishi meets the limitations of the claim.

3. Claims 1-7, 18, and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent No. 4,902,309 to Hempenstall (Hempenstall).

In reference to claim 1, Hempenstall discloses a superatmospheric-pressurized source (C, Figs. 1, 7; col. 4, lines 15-35) of gaseous oxygen; an inlet (38, Fig. 7; col. 5, line 66—col. 6, line 8) for the gaseous oxygen from the superatmospheric-pressurized source wherein the exhaust emissions from the engine flow past the inlet and form a mixture with the gaseous oxygen from the inlet; and a diesel particulate filter (24, Figs. 1, 7; col. 5, lines 27-65) or catalyzed diesel particulate filter through which the mixture of exhaust emissions from the engine and gaseous oxygen from the inlet flows, wherein the oxygen content of the mixture is greater than the oxygen content of the exhaust emissions from the engine (col. 5, line 27—col. 6, line 65).

In reference to claims 2 and 3, Hempenstall discloses the gaseous oxygen is continuously or intermittently introduced into the inlet for mixing with the engine exhaust emissions during the operation of the engine (col. 6, lines 66-68).

In reference to claim 4, Hempenstall discloses the oxygen content of the mixture is greater than the oxygen content of the exhaust emissions from the engine by at least 0.1% by volume (col. 5, line 27—col. 6, line 65).

In reference to claim 5, Hempenstall discloses the source of gaseous oxygen is air (col. 4, lines 15-35) wherein the oxygen containing gas has an oxygen content of 1 to 99% by volume (col. 5, line 27—col. 6, line 65).

In reference to claim 6, Hempenstall discloses the superatmospheric-pressurized source of gaseous oxygen comprises a compressor (col. 4, lines 15-35), a compressed gas storage container (col. 3, lines 53-64), or a mixture thereof.

In reference to claim 7, Hempenstall discloses the gas in the compressed gas storage container is air (col. 4, lines 15-35) having an oxygen content greater than 21% by volume to 99% by volume (col. 5, line 27—col. 6, line 65).

In reference to claim 18, under the principles of inherency, if a prior art device, in its normal and usual operation, would necessarily perform the method claimed, then the method claimed will be considered to be anticipated by the prior art device (see MPEP 2112.01). Therefore, the prior art device of Hempenstall meets the limitations of the claim.

In reference to claim 19, Hempenstall discloses the temperature for regeneration of the diesel particulate filter or catalyzed diesel particulate filter is decreased by 1 to 200°C (from 550°C to 350°C; see col. 1, lines 49-65; col. 5, lines 27-65).

4. Claims 1, 16, and 17 are rejected under 35 U.S.C. 102(e) as being anticipated by US Patent No. 6,786,041 to Itoh et al. (Itoh).

In reference to claim 1, Itoh discloses a superatmospheric-pressurized source (80, Fig. 18; col. 20, line 43 – col. 22, line 31) of gaseous oxygen; an inlet (78, Fig. 18; col. 20, line 43 – col. 22, line 31) for the gaseous oxygen from the superatmospheric-pressurized source wherein the exhaust emissions from the engine flow past the inlet and form a mixture with the gaseous oxygen from the inlet; and a diesel particulate filter (22, Fig. 18; col. 20, line 43 – col. 22, line 31) or catalyzed diesel particulate filter through which the mixture of exhaust emissions from the engine and gaseous oxygen from the inlet flows, wherein the oxygen content of the mixture is greater than the oxygen content of the exhaust emissions from the engine.

In reference to claim 16, Itoh discloses an oxidation catalyst (col. 25, lines 4-10).

In reference to claim 17, Itoh discloses an outlet (25, Fig. 18; col. 5, lines 35-54) for recirculating a portion of the exhaust emissions from the engine to an air intake of a combustion system of the engine.

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation

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under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hempenstall as applied to claim 6 above, and further in view of US Patent No. 6,173,567 to Poola et al. (Poola).

Hempenstall discloses the system of claim 6, but fails to disclose the superatmospheric-pressurized source of gaseous oxygen further comprises a permeable membrane wherein the membrane provides oxygen or a gas having increased oxygen content from a mixture of gases that includes oxygen. Poola discloses a similar exhaust treatment system that supplies oxygen-enriched air into the exhaust of an engine and is brought in merely to demonstrate that it is conventional in the art to provide said oxygen-enriched air by use of a permeable membrane (see col. 3, lines 23-63). It has been held that the simple substitution of one known element for another to obtain predictable results is obvious (see MPEP 2141). Therefore it would have been obvious to one having ordinary skill in the art at the time of invention to have substituted the oxygen source of Hempenstall for the conventional source of Poola to have the predictable result of reducing the number of components in the system.

8. Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hempenstall as applied to claim 1 above, and further in view of US PGPUB No. 2004/0065078 to Schafer-Sindlinger et al. (Schafer-Sindlinger).



Hempenstall discloses the system of claim 1, and further discloses a catalyzed (col. 5, lines 27-65) filter is a wall-flow ceramic monolith (Fig. 4; col. 1, line 25-col. 2, line 6), but fails to disclose specifically that the coating comprises 5 to 150 g/ft<sup>3</sup> of a catalyst metal. Schafer-Sindlinger discloses a similar system and is brought in merely to demonstrate that it is conventional in the art for catalyzed filters to have a coating of platinum, palladium, rhodium, magnesium, calcium, strontium, or barium (see pars. 0034-0042). Furthermore, it has been held that where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation (see MPEP 2144.05), and that the simple substitution of one known element for another to obtain predictable results is obvious. Therefore, it would have obvious to have substituted the conventional filter as disclosed by Schafer-Sindlinger into the system as disclosed by Hempenstall, and then optimized the amounts of catalytic components to have the predictable result of improved soot oxidation.

9. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hempenstall as applied to claim 1 above, and further in view of US Patent No. 4,099,377 to Yoshimura et al. (Yoshimura).

Hempenstall discloses the filter of claim 1 through which the mixture of exhaust emissions and atmospheric air flows wherein the oxygen content of the mixture is greater than the oxygen content of the exhaust emissions from the engine (col. 5, line 27—col. 6, line 65), and further discloses atmospheric air as a source of gaseous oxygen (C, Figs. 1, 7; col. 4, lines 15-35); and an inlet (38, Fig. 7; col. 5, line 66—col. 6,

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line 8) for the atmospheric air. Hempenstall fails to disclose a venturi which draws in the atmospheric air through the inlet. Yoshimura discloses a similar exhaust treatment system that utilizes secondary air by way of a venturi which draws in the atmospheric air through the inlet (see Fig. 3; col. 6, lines 43-54). It has been held that the simple substitution of one known element for another to obtain predictable results is obvious (see MPEP 2141). Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to have substituted the venturi apparatus as suggested by Yoshimura for the compressor driven system of Hempenstall to have the predictable result of a reducing the number of components thereby reducing the complexity of the system.

10. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hempenstall as applied to claim 1 above, and further in view of US Patent No. 5,716,586 to Taniguchi (Taniguchi).

Hempenstall discloses the method claim 18, but fails to specifically disclose the rate for regeneration of the diesel particulate filter or catalyzed diesel particulate filter is increased. Taniguchi discloses a similar filter regeneration method and teaches that the rate of regeneration increases with the amount of air supplied to the filter (see Abstract, col. 1, line 13-col. 2, line 10). It has been held that the use of a known technique to improve similar devices in the same way is obvious (see MPEP 2141). Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to have utilized the known technique of Taniguchi in the method as disclosed by Hempenstall to have the benefit of increasing the rate of regeneration of the filter.

***Conclusion***

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Matthias whose telephone number is (571) 270-5840. The examiner can normally be reached on Monday-Friday 7:00AM-4:00PM.

12. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Denion can be reached on (571) 272-4859. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

13. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Thomas E. Denion/  
Supervisory Patent Examiner, Art Unit 3748

JM